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DESCRIPTION OF A TWENTY-YEAR SERIES OF EGGS
OF THE SIERRA JUNCO

By MILTON S. RAY

WITH FOUR PHOTOGRAPHS BY OLUF J. HEINEMANN

THE SERIES of eggs of the Sierra Junco (*Junco oreganus thurberi*) in the Woodland Heights Museum of Analytical Oology (San Francisco) consists of exactly seventy-five sets. These have been collected during the period from 1900 to 1919 or an average of about four sets a year. The sets taken were specially selected to show variation and constitute only a fractional part of the large number noted afield.

In the arrangement of the following text, a systematic plan for egg description is proposed in place of the incomplete, rambling and often rather vague descriptions of Oliver Davie and various other writers. The color-plate numbers refer to Ridgway's *Color Standards and Color Nomenclature*, 1912. Notwithstanding the abundance of material in the museum or that which I have inspected afield, it is quite possible that other types of coloration in the eggs of this bird still remain to be described.

Junco oreganus thurberi Anthony
SIERRA JUNCO

Synonyms.—Thurber Junco; Western Snowbird.

Description.—Cf. Ridgway, Birds of North and Middle America, part I, 1901, p. 287.

Breeding Range.—Cf. Grinnell, Pacific Coast Avifauna no. 11, p. 120.

Eggs.—Usually 4, sometimes 3, occasionally 5; also authentic set of 1.

Size (in inches).—Average set (no. 23), .78x.60 .78x.59 .77x.61 .77x.61

Small set (no. 47). .69x.49 .73x.51 .73x.51 .74x.52

Small set (no. 61). .67x.54 .68x.54 .69x.54 .71x.55

Large set (no. 20). .96x.57 .91x.57 .90x.57

Shape.—Usually ovate or rounded ovate, sometimes short ovate, rarely elongate ovate.

Texture.—Fine.

Surface.—A slight, very slight, or scarcely perceptible, gloss.

Coloration.—

1. Ground color white, faintly tinged with lichen-green (Ridgway, pl. XXXIII), spotted and blotched or splashed with hazel (pl. XIV), chestnut (pl. II), and light vinaceous gray (pl. I). This is the usual coloration of the eggs of this junco. [Four eggs of set no. 15.]
2. Ground color white, faintly tinged with lichen-green (pl. XXXIII), heavily blotched and splashed, principally around the greater end, with hazel and cinnamon rufous (pl. XIV). [Egg of set no. 48.]
3. Ground color white, faintly tinged with lichen-green (pl. XXXIII), spotted and lightly blotched, principally around the major end, with chestnut (pl. II), vinaceous drab (pl. XLV) and light vinaceous gray (pl. I). This specimen thus shows three distinct colors of markings. [Egg in set 12.]
4. Ground color pale olive buff (pl. XL), spotted and splashed, principally in a heavy wreath around the larger end, with hazel (pl. XIV) and light vinaceous-gray (pl. I). [Egg in set 74.]
5. Ground color white faintly tinged with lichen-green (pl. XXXIII) roughly wreathed around the greater end with spots, splashes and scrawls of hazel (pl. XIV) and light seal brown (pl. XXXIX), and with scattered spots of light vinaceous-gray (pl. I). [Egg in set 56.]
6. Ground color very pale lichen-green (pl. XXXIII), spotted and blotched (some eggs very finely spotted and dotted), almost entirely in a wreath around the greater end, with light vinaceous-gray (pl. I) and aniline black (pl. I). This is a very distinct and rather uncommon type. [Egg in set 33.]

7. Ground color white faintly tinged with lichen-green (pl. XXXIII), spotted and lightly blotched, very evenly over the entire surface, with vinaceous drab (pl. XLV) and hazel (pl. XIV), but principally the former color. The blending of these two colors, which are very closely intermixed, gives to the egg a peculiar "pinkish-red" effect. [Egg in set 38.]
8. Ground color white faintly tinged with lichen-green (pl. XXXIII), spotted and blotched principally around the larger end with vinaceous drab (pl. XLV). [Egg in set 53.]
9. Ground color white faintly tinged with lichen-green (pl. XXXIII), finely spotted and blotched, principally around the larger end, with light vinaceous gray (pl. L). [Egg of set 42.]
10. Ground color very pale lichen-green (pl. XXXIII), scatteringly and sparsely marked (in fact the markings are so few that they can be counted) with tiny

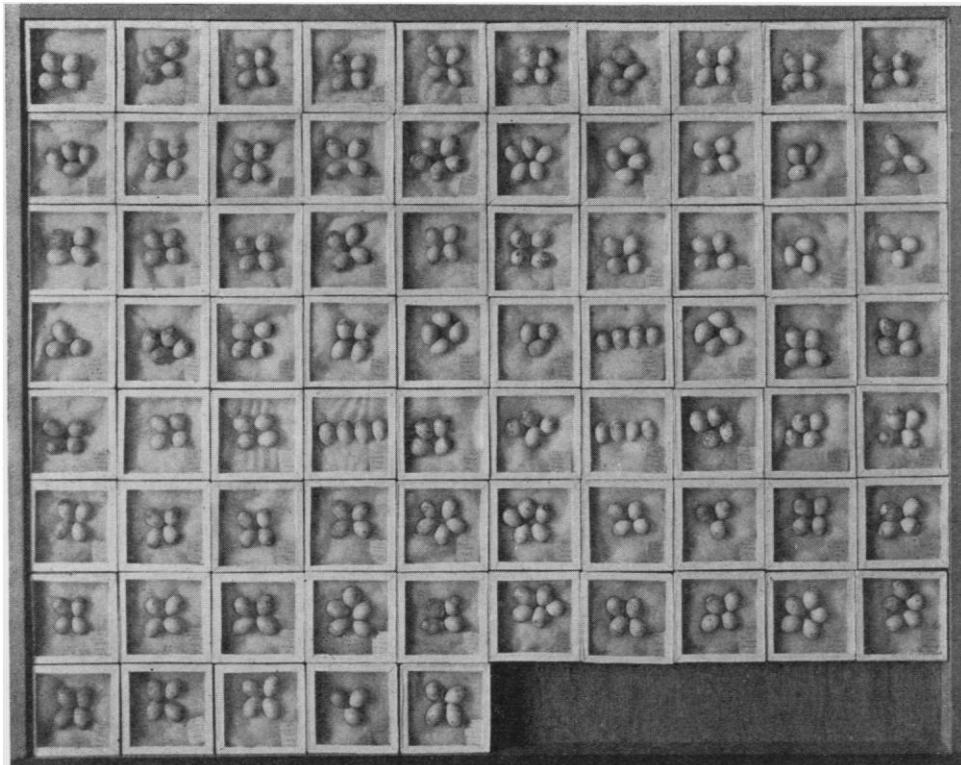


Fig. 36. THE TWENTY-YEAR SERIES OF EGGS OF THE SIERRA JUNCO, CONSISTING OF 75 SETS; ARRANGED NUMERICALLY LEFT TO RIGHT.

scrawls and spots of aniline black (pl. L). This is a rare type. [Egg in set 30.]

11. Very pale lichen-green (pl. XXXIII), unmarked. A rare type. [Egg of set 30.]
- Types of Marking.—*

1. Unmarked save for a few scattered spots and scrawl-like spots.
2. Obscurely washed and clouded over the entire surface.
3. Spotted and finely blotched, principally about the larger end.
4. Spotted and finely blotched over the entire surface.
5. Heavily spotted and blotched in a wreath around the major end, the balance of the surface being almost clear of markings.

6. Heavily spotted and blotched in a rough wreath around the larger end, and with finer and more scattered markings over the balance of the egg. Sometimes, so minute and close that the individual specks are scarcely discernible, giving a peculiar dusty or "cobweb-like" effect.

Field Notes.—My observations of this subspecies cover elevations from 3,500 to 11,000 feet altitude in the Sierras, and localities from Eagle Lake, Lassen County, south to Lake Reflection near the Kings-Kern Divide. Most nests are found by flushing the sitting bird, but almost any nest can be located by patient watching. They are usually placed on the ground, sunk flush with, or beneath, the surface, and concealed by overhanging earth, rock, weeds, shrubbery, or a fallen log or limb. Also noted nesting in holes in trees and banks, on rafters of deserted cabins, in empty tin cans or wooden boxes, and once under the eaves of an occupied store, 25 feet up; but at no time, as in the case of *Junco oreganus pinosus*, have I found a well built nest placed on the

branch of a tree. Henry W. Carriger, however, informs me that at Lake Tahoe he found one nest placed on a pine limb, 5 feet up.

A typical nest (no. 18) is composed outwardly of grasses, rootlets, string and pine needles, and is lined profusely with red cow-hair. This measures 4.25 inches across, the cavity 2.50 across by 1.38 deep. Taken June 8, 1911, Bijou, Lake Tahoe, California (elevation 6,220 feet), with four fresh eggs. Nest placed on meadow ground, flush with the surface, beneath a burnt log.

Another (no. 24) is made of rootlets, bark strips and moss, and is lined

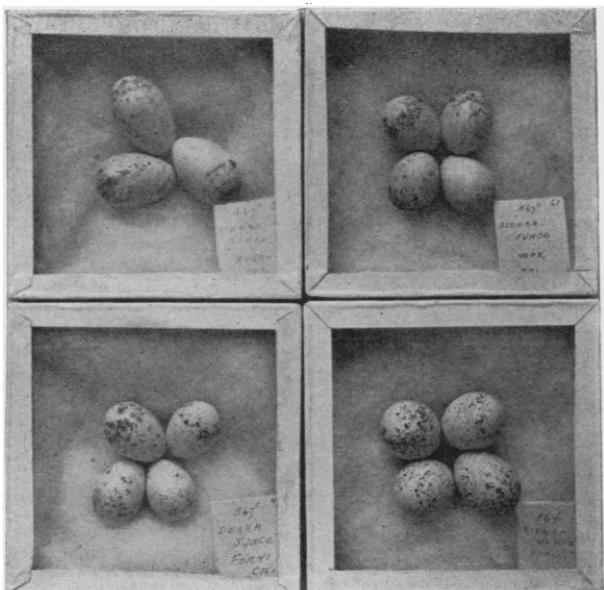


Fig. 37. FOUR SETS OF EGGS OF THE SIERRA JUNCO SHOWING VARIATION IN SIZE; IN THE ACCOMPANYING TEXT THE MEASUREMENTS OF THESE SETS ARE GIVEN. UPPER ROW, LEFT TO RIGHT, SETS 20 AND 47; LOWER ROW, 61 AND 23.

with fine grasses and wild animal hair. Measures 4.25 across; cavity 2.00 by 1.13; collected May 16, 1913; Fyffe, El Dorado County, California (elevation 3,700 feet). Held four eggs, incubation well started. Nest placed near an irrigation ditch, entirely concealed by overhanging foliage, small cedar and alder saplings, and dead leaves.

A third nest (no. 2) is built of grasses, weed-stems and pine needles and lined with fine grasses and horse-hair. Size 5.00 across; cavity 3.00 by 1.50; found May 21, 1910, at Bijou, California; contained 4 fresh eggs. Nest located beneath the overhanging edge of a log on meadow ground.

We have taken eggs from the beginning of May up to the middle of July, considerable variation in this respect being due to altitude and also to seasonal

conditions. At Bijou, California, I have found nests in early May while the majority of the juncos were still in flocks. At Forni Meadow, 7,500 feet elevation, we noted a pair engaged in nest building on July 2, 1916.

It is not often that an opportunity is offered to secure the first and second sets of eggs from any one pair of juncos. This difficulty is due to the variable character of the birds' nesting sites, to the heavy percentage of nests destroyed, and to the time that must necessarily elapse before a second set can be laid. During the present year (1919), however, we were fortunate in securing first and second sets from two pairs of juncos which, nesting in rather secluded situations, rendered the locating of their second nests less difficult. Set 63 was taken June 12; and on June 21, 300 feet distant, the second set, no. 75, was secured. Set 62 was collected on the 11th of June, and no. 73, a second set, nine days later and but 60 feet away from the site of this pair's first nest.

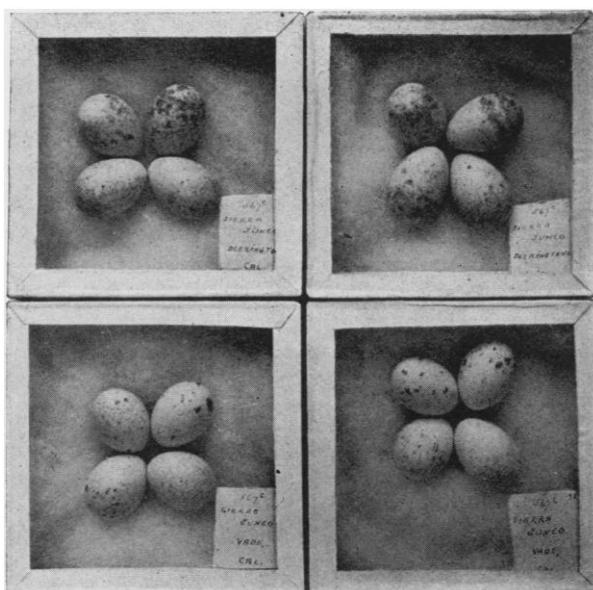


Fig. 38. A STUDY OF FIRST AND SECOND SETS OF EGGS FROM THE SAME PAIRS OF JUNCOS; NOTE THE WONDERFUL SIMILARITY IN SIZE, SHAPE, AND STYLE OF THE MARKINGS. UNFORTUNATELY AN EVEN GREATER SIMILARITY IN THE COLORING CANNOT BE SHOWN. UPPER ROW, SETS 63 AND 75; LOWER ROW, SETS 62 AND 73.

these breeding birds, of which several were secured, is positive. Now I wish to show that, according to published and other records, we have breeding *thurberi* almost entirely surrounded by breeding *pinosus*! For to the northward, in rather similar country (not among redwood timber) in Northern San Mateo County, J. Roy Pemberton has secured typical *pinosus* breeding. Northward also, but much nearer, in fact only a few miles from Stanford (and likewise not in sequoian association) Chase Littlejohn has also found *pinosus* breeding, in Redwood City. Mr. Littlejohn writes as follows, under date February 23, 1919: "While they are common enough in the winter I can say I have never found *thurberi* here during the breeding season, and I have paid partic-

Construction of all four nests was practically the same. The second nests were in no way more carefully concealed, as has sometimes been the case in my experience with those of other species.

Much of interest could, of course, be written regarding the junco from notes afield, but, as previously explained, the intention here is to bring the eggs to the front and leave all else subordinated. Before closing, however, I wish to speak of a very unusual situation. This is the occurrence and nesting of this bird at Stanford University near Palo Alto, Santa Clara County, California. Professor J. O. Snyder personally informed me that the identity of

ular attention since I noticed in THE CONDOR that a set of their eggs had been taken at Palo Alto. I know of three junco nests being found about Redwood City last summer. These were built about the eaves of occupied dwellings and in one case inside the attic and all of them were of *pinosus*."

Westward, in sequoian environment, *pinosus* has been found breeding in the vicinity of King Mountain. The late Chester Barlow, under date of May 16, 1901, wrote me as follows: "I took a set of four eggs of *pinosus* near King

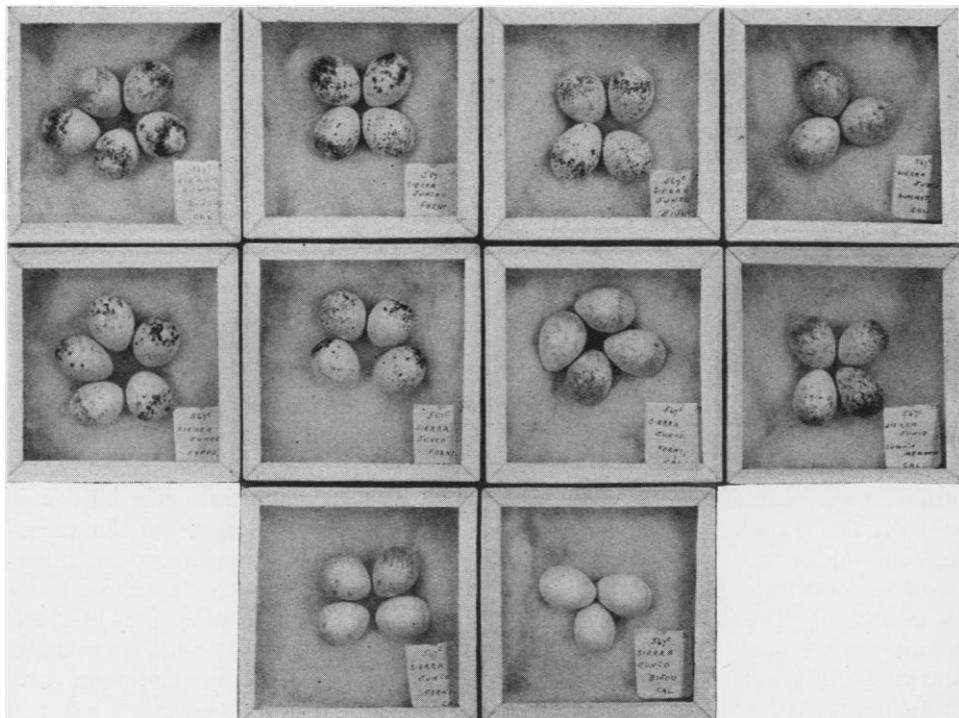


Fig. 39. THE COLOR DESCRIPTIONS OF THE EGGS OF THE SIERRA JUNCO IN THE PRESENT ARTICLE ARE BASED UPON THE TEN SETS SHOWN ABOVE. THESE, AS ARRANGED, ARE NUMBERS 15, 48, 12, 74, 56, 33, 38, 53, 42, 30, READING LEFT TO RIGHT.

Mountain last Sunday. I shot the female parent, which does not differ from breeding birds taken farther south in the range".

Southward from Stanford in the redwood forests of the Santa Cruz Mountains *pinosus* is the only form of the genus recorded by Richard C. McGregor in his "Birds of Santa Cruz County" (p. 14), while eastward from Stanford and Palo Alto a wide sweep of salt marsh runs out to San Francisco Bay, a region wholly unsuitable for birds of this character.

San Francisco, July 28, 1919.